and rise to the surface, where they may receive the influence of light and air. In examining the surface-mud of a shallow rain-water pool, in a recent excavation in brick clay, he found little else but an abundance of minute diatomes. He was not sufficiently familiar with the diatomes to name the species, but it resembled *Navicula radiosa*. The little diatomes were very active, gliding hither and thither, and knocking the quartz sand grains about. Noticing the latter, he made some comparative measurements, and found that the Naviculæ would move grains of sand as much as twenty-five times their own superficial area, and probably fifty times their own bulk and weight, or perhaps more.

Dr. J. Gibbons Hunt made the following remarks:—

While examining, this summer, into the structure of some of the so-called insectivorous plants, but more especially into the anatomy of the genus *Nepenthes*, I observed a part which I have not seen expressed before, and of sufficient interest, perhaps, to go upon record.

In the vegetable kingdom it is exceedingly rare to meet with glands which have distinct *excretory* ducts. Some authors deny their existence entirely; but in *Nepenthes rafflesiana*, *N. distillatoria*, and *N. phyllamphora*, and probably in all the species, are large cylindrical glands which pour out their secretion through *distinct excretory ducts*. In *N. distillatoria* these glands are, on an average, about the one-thirty-fifth of an inch long, and the one-twentieth of an inch wide, while the ducts measure about the one-thirtieth of an inch in length. In the *Rafflesiana* the glands and ducts are much larger. A dense tissue of cells surrounds and thoroughly imbeds these glands in *Nepenthes*, and this peculiarity of position renders excretory ducts necessary for the secretion to find its way into the pitchers.

In the vegetable kingdom it is the rule for glands to be located *on* surfaces, but in *Nepenthes* where one system of glands is *imbedded* the duct becomes necessary, and so far as I know is the only instance of such ducts among plants.

September 22.

The President, Dr. Ruschenberger, in the chair.

Thirty-five members present.

Remarks on Sponges.—Prof. Leidy remarked that the animal nature and structure of the sponges were first clearly made known by Mr. H. J. Carter, of England, and Prof. H. James Clark, of this country. The sponges are compound, flagellate infusoria. The sponge infusorium had been appropriately named by Mr. Carter the spongozoon, the exact characters of which were first

noted by Prof. Clark, and confirmed by Mr Carter. The spongozoon is a globular cell, surmounted by a delicate cup, from the bottom of which projects a flagellum. The little animals are situated on the interior of hollow spheres of the sponges sustained by the skeleton of the compressed animal, whether this be corneous, as in the common sponge, or whether it be siliceous or calcareous. The observations of Prof. Clark had been made on a fresh water sponge, to which he had given the name of *Spongilla arachnoidea*. Mr. Carter's observations had been made on both fresh-water sponges and the different classes of marine sponges. Prof. Leidy at first supposed that the sponge described by Prof. Clark might be the one he had formerly noticed under the name of *Spongilla fragilis* (Proc. A. N. S. 1851, 278), but comparison proved them to be different. They are both of the same color, but the siliceous spicules of *S. arachnoidea* are stated to be tuberculate, while they are smooth in *S. fragilis*. Dr. Leidy had examined the spongozoon of the latter, and found that it presented the same essential structure as described by Prof. Clark and Mr. Carter in other sponges.

Prof. Leidy further remarked that he had found several specimens of the curious rhizopod, discovered by Cienkowski, and named by him *Clathrulina elegans*. They were found among Utricularia, but though retaining their stems were unattached and apparently dead. One of the specimens presented a peculiar and as yet unexplained character. On one side of the laticed head the orifices were capped with little inverted, hemispherical cups, from the top of which projected a funnel like the cup of the spongozoa. Prof. Leidy was pursuing his search for the living and attached *Clathrulina*.

Prof. Leeds made some remarks concerning a remarkable mineral found in a bank of white sand near Fayetteville, N. C. It was, in appearance, a rod of glass, four feet in length and two inches in diameter, which was made up of a great number of irregular fragments. These fragments were highly polished on one side—the side apparently turned toward the hollow axis of the rod, and excessively contorted on the exterior side. They consisted almost entirely of silex, the remainder being chiefly oxide of iron. Accurate analysis showed that the percentages of the constituents in these siliceous fragments and in the sand found in the hollow core of the rod were the same. On account of this identity in composition, and the incompetency of any other known agent to produce such a fusion of almost pure silex, it was concluded that this "rod of glass" was a result of lightning—a *lightning-tube* or *fulgurite*, as such products have been called.

Prof. Leeds also gave the particulars concerning a great elevation of temperature which had occurred in the adit level of a lead mine in Missouri, where the heat had suddenly risen from 60° to

over 100°, and had compelled the workmen, for the time being, to suspend work. The earth was found to contain over 75 per cent. of sulphate of protoxide of iron, and the heating had been due to the rapid absorption of oxygen by sulphuret of iron, disseminated throughout the earth in a finely divided condition.

Change of Habit through Fungoid Agency.—Mr. Thomas Meehan referred to a former communication in which he exhibited specimens of *Euphorbia cordata*, or *E. humistrata*, collected by him in the Rocky Mountains, and which, normally procumbent, had assumed an erect habit on being attacked by a fungulus Æcidium Euphorbiæ hypericifoliæ.

He now found that the common trailing *Euphorbia* of our section, *E. maculata*, when attacked by the same fungulus, assumed the same erect habit. There was an additional interest in this observation, from the fact that with change of habit of growth there was a whole change in specific character in the direction of *E. hypericifolia*. In a comparison of the leading characters of the two species, we see that in *E. maculata* there is a profusely hairy stem, while that of *E. hypericifolia* is nearly smooth. The same is true of the fruit. The leaves of the former species are very oblique at the base—the latter nearly regular. The flowers are produced in all the axils. In the *E. hypericifolia* the stems have a tendency to be nodose at the joints, while *E. maculata* is nearly free from this character, and the flowers are mainly in heads at the ends of the branches. The *E. maculata*, after the fungoid attack becoming erect, also becomes nodose, and has the flowers on the ends of the comparatively smooth branchlets, while the leaves have lost their pointed obliquity; and, in short, all the characters make an intermediate between the two species.

He said it would not be fair to assume, from these facts, that *Euphorbia hypericifolia* was an evolution from *E. maculata*, but, as there could be no doubt that nutrition was one of the factors in the government of form, we could say that certain phases of nutrition, brought about by an attack of a minute fungus, would change the characters to the direction of those in that species.

September 29.

The President, Dr. Ruschenberger, in the chair.

Sixteen members present.

There not being a sufficient number of members present for the transaction of business, in accordance with the By-Laws, the meeting adjourned until October 6.

On favorable report of the Committee to which it was referred, the following paper was ordered to be printed:—